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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/586,561	06/02/2000	Juha Ylitalo	4770.81503	7618

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Banner & Witcoff Ltd
Eleventh Floor 1001 G Street NW
Washington, DC 20001-4597

EXAMINER

WILLIAMS, LAWRENCE B

ART UNIT	PAPER NUMBER
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2634

DATE MAILED: 06/21/2004

8

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/586,561

Applicant(s)

YLITALO ET AL.

Examiner

Lawrence B Williams

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 April 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17;26-42 is/are pending in the application.
- 4a) Of the above claim(s) 18-25; 43-50 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8, 11, 15-17, 26-33, 36 and 40-42 is/are rejected.
- 7) ☒ Claim(s) 9, 10, 12-14, 34, 35 and 37-39 is/are objected to.
- 8) ☒ Claim(s) 18-25 and 43-50 are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 July 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2. 6) ☐ Other:

DETAILED ACTION

Specification

1. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of **50 to 150** words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

2. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

4. Claims 1-8, 11, 15-17, 26-33, 36, 40-42 are rejected under 35 U.S.C. 102(a) as being anticipated by Hottinen et al. (Transmit Diversity Using Filtered Feedback Weights in the FDD/WCDA System).

(1) With regard to claim 1, Hottinen et al. discloses a method comprising steps of receiving at least two space-time coded signals from an antenna system associated with a first station; determining complex channel state information based on the received space-time coded signals; and sending the complex channel state information to the first station (pg. 16-17, paragraph 2.2).

(2) With regard to claim 2, Hottinen et al. also discloses method of claim a step of segmenting the complex channel state information into a plurality of channel state information segments, wherein the step of sending the complex channel state information includes sending the plurality of channel state information segments in a sequence (pg. 17, lines 1- paragraph 2.2.2 Mode 2).

(3) With regard to claim 3, Hottinen et al. discloses wherein the step of segmenting the channel state information includes: determining a number of phase bits allocated for phase information according to a mode of operation; rounding and truncating a correction phase angle to fit into the number of phase bits; determining a number of amplitude bits allocated for amplitude information according to the mode of operation; and rounding and truncating a correction amplitude according to the number of amplitude bits (pg. 17, 2.2.1 Mode 1).

(4) With regard to claim 4, Hottinen et al. also discloses wherein the step of sending the plurality of channel state information segments includes sending a correction phase angle most significant bit before sending a correction amplitude most significant bit (pg. 17, 2.2.1, Mode 1; Table 1).

(5) With regard to claim 5, Hottinen et al. also discloses wherein the step of sending the plurality of channel state information segments includes sending a correction phase angle most

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significant bit before sending a correction phase angle least significant bit (pg. 17, 2.2.1, Mode 1; Table 1).

(6) With regard to claim 6, Hottinen et al. also discloses the method of claim 2 further comprising steps of: receiving the plurality of channel state information segments; reconstructing the complex channel state information from the received plurality of channel state information segments; and weighting first and second feed signals to feed respective first and second antennas based on the reconstructed complex channel state information (pg. 17-18, 2.2.2 Mode 2).

(7) With regard to claim 7, Hottinen et al. also discloses wherein the step of sending includes sequentially sending the plurality of channel state information segments over a time period based on a channel coherence time (pg. 17, 2.2.1 Mode 1).

(8) With regard to claim 8, Hottinen et al. also discloses wherein: the antenna system includes a multi-beam antenna array (pg. 16, WCDMA Transmit Diversity Concept); the step of receiving receives first and second space-time coded signals from respective first and second beams of the multi-beam antenna array; and the step of determining determines the complex channel state information based on the received first and second space-time coded signals (pg. 16, 2.2, Feedback Modes).

(9) With regard to claim 11, Hottinen et al. also discloses wherein: the antenna system includes first and second diversity antennas, the first and second diversity antennas being one of first and second orthogonally polarized antennas and first and second antennas spatially separated by at least one wavelength; the step of receiving receives first and second space-time coded signals from respective first and second diversity antennas; and the step of determining

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determines the complex channel state information based on the received first and second space-time coded signals (pg. 16-17, WCDMA Transmit Diversity Concept- 2.2 Feedback Modes).

(10) With regard to claim 15, Hottinen et al. also discloses wherein the complex channel state information includes at least one weight, each weight including amplitude and phase angle information (pg. 17; 2.2.1, Mode 1).

(11) With regard to claim 16, Hottinen et al. also discloses wherein the step of determining complex channel state information includes determining a correction phase angle to adjust a first phase of a first space-time coded signal transmitted from a first antenna relative to a second phase of a second space-time coded signal transmitted from a second antenna so that the first and second space-time coded signals constructively reinforce at a second station (pg. 16-17, 2.2 Feedback Modes).

(12) With regard to claim 17, Hottinen et al. also discloses wherein the step of determining a correction phase angle includes: measuring a first phase angle defined by the first phase; measuring a second phase angle defined by the second phase; and determining the correction phase angle defined to be a difference between the second phase angle and the first phase angle (pg. 16-17, 2.2 Feedback Modes).

(13) With regard to claim 26, claim 26 inherits the limitations of claim 1. Though Hottinen et al. do not explicitly disclose a processor to determine complex channel state information from the received space-time coded signals; it would be inherent for the system since Hottinen et al. does determine complex channel state information in both Modes 1 and 2.

(14) With regard to claim 27, claim 27 inherits all limitations of claims 2 and 26 above.

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- (15) With regard to claim 28, claim 28 inherits all limitations of claims 3 and 27 above
- (16) With regard to claim 29, claim 29 inherits all limitations of claims 4 and 27 above.
- (17) With regard to claim 30, claim 30 inherits all limitations of claims 5 and 27 above.
- (18) With regard to claim 31, claim 31 inherits all limitations of claims 6 and claim 27 above.
- (19) With regard to claim 32, claim 32 inherits all limitations of claims 7 and claim 27 above.
- (20) With regard to claim 33, claim 33 inherits all limitations of claims 8 and claim 26 above.
- (21) With regard to claim 36, claim 36 inherits all limitations of claims 11 and 26 above.
- (22) With regard to claim 40, claim 40 inherits all limitations of claims 15 and 26 above.
- (23) With regard to claim 41, claim 41 inherits all limitations of claims 16 and 26 above.
- (24) With regard to claim 42, claim 42 inherits all limitations of claims 17 and 41 above.

Allowable Subject Matter

5. Claims 9, 10, 14-14, 34, 35, 37-39 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lawrence B Williams whose telephone number is 703-305-6969.

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The examiner can normally be reached on Monday-Friday (8:00-5:00) being out of the office every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on 703-305-4714. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9306 for regular communications and 703-872-9306 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4750.

Lawrence B. Williams

lbw
June 7, 2004



STEPHEN CHIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600